Date 3/31/97	Job No. 96-630
Attention Linda Elliott	
Re:	

People • Science • Technology

LETTER OF TRANSMITTAL

STONE ENVIRONMENTAL INC

58 East State Street
Montpelier, Vermont
05602 USA

Phone / 802. 229.4541
Fax / 802. 229.5417

To:
ANR - DEC
Waste Mgmt - Div.
103 S. Main St
Waterbury VT 05671-0404

CC:

Copies	Date	No.	Description
1	3/31/97		Secondary Site Inv. Report

Transmitted:

☐ For Approval ☐ Approved as Submitted ☐ Resubmit
☐ For Your Use ☐ Approved as Noted ☐ Submit
☐ As Requested ☐ Returned for Corrections ☐ Return
☐ For Review

REMARKS

Signed: Natalie Rausa

Phase (check one)	Type (check one)
■ Secondary Site Investigation ☐ Corrective Action Feasibility Investigation ☐ Corrective Action Plan ☐ Corrective Action Summary Report ☐ Operations and Monitoring Report	☐ Work Scope ■ Technical Report ☐ PCF Reimbursement Request ☐ General Correspondence

SECONDARY SITE INVESTIGATION REPORT

Pedrozo Residence
6 Greenfield Terrace
Montpelier, VT

DEC Site No. 96 2078
SEI Project No. 96-630

Client:
Don Pedrozo
6 Greenfield Terrace
Montpelier, VT 05602
(802) 223-7601

Prepared by:
Stone Environmental, Inc.
58 East State Street
Montpelier, VT 05602
(802) 229-4541
Contact: Jeff Kelley, Project Geoscientist

March 31, 1997

EXECUTIVE SUMMARY

Contamination was reported on the Don Pedrozo Property in Montpelier, Vermont following the removal of a 500 gallon fuel oil underground storage tank (UST) in June 1996. Stone Environmental Inc. (SEI) performed a subsurface investigation of the fuel oil contamination in August 1996. Questionable amounts of total petroleum hydrocarbon (TPH) contamination were detected in the soil of two of the borings, while elevated TPH concentrations were detected in the boring in the tank pull area. In response to these detections, SEI returned to the property in both December 1996 and January 1997 to install 3 permanent groundwater monitoring wells.

SEI collected groundwater samples from the three newly installed monitoring wells and delivered them to the Vermont Department of Environmental Conservation Environmental Laboratory for analyses using EPA Methods 8020 and Modified 8015-TPH. Results from the laboratory indicate that there were no parameters tested that were above the method detection limit, except for toluene, which was detected in two of the wells below the Vermont Groundwater Enforcement Standards. This contamination may be attributed to contaminated PVC well materials purchased from TIMCO Manufacturing, Inc.

The groundwater flow direction measured on February 12, 1997 was to the south with a gradient of 3 percent. As there is a foundation footing drain around the house, there is probably a western flow component present near the building.

The results of this and past reports indicate that the soil contamination has been sufficiently delineated and is contained in the immediate area of the tank removal. We recommend removing the contaminated soils and transporting them to a soil treatment facility as soon as site conditions allow. We also recommend collecting one more round of groundwater samples from the monitoring wells. If contamination is still not detected from this sampling event, we feel the site should be a candidate for Sites Management Activities Completed status.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ATTACHMENTS

1.0 INTRODUCTION

In August 1996, Stone Environmental, Inc. (SEI) performed an initial site investigation at a property owned by Don Pedrozo in response to the removal of a 500 gallon fuel oil underground storage tank (UST) in June 1996. This investigation identified approximately 4.5 cubic yards of contaminated soil in the area where the tank was removed. We also discovered trace amounts of total petroleum hydrocarbon (TPH) in the groundwater samples from two temporary monitoring well locations. Based on the results of this investigation (discussed in our November 4, 1996 report) we recommended installing three groundwater monitoring wells to delineate the extent of groundwater contamination at the site. We installed two wells on December 22, 1996 and the third well on January 25, 1997. This report describes the methods used in the investigation and presents all field and laboratory results.

2.0 SITE LAYOUT

The Pedrozo property comprises approximately 0.3 acres, with the dwelling oriented roughly north to south on the eastern half of the parcel. The topography of the site is characterized by a flat front (east) yard with a steep slope to the back (west) yard. The UST was located adjacent to the east side of the house, and just south of the paved driveway. According to Mr. Pedrozo, there is a foundation drain serving the entire perimeter of the home, with the outfall located in the backyard (drain 2 on Figure 2). There is also a drain with its inflow in the basement and outfall in the backyard (drain 1).

3.0 MONITORING WELL INSTALLATION

On December 22, 1996 Adams Engineering of Underhill, Vermont installed two permanent PVC monitoring wells (MW-2 and MW-3) under our supervision. Due to muddy conditions we were unable to install the proposed third monitoring well. This well (MW-4) was installed on January 24, 1997 when the ground was again frozen.

3.1 Soil Sampling

Adams' advanced each boring in 5 foot increments collecting continuous soil samples. We logged each 5 foot spoon and collected soil samples at either textural changes or approximate 1 foot increments. Each sample was placed in a Ziplock® bag, sealed, and allowed to equilibrate in the SEI vehicle for a minimum of five minutes. SEI then shook the sample bag and measured volatile organic compounds (VOCs) from the sample headspace using a MiniRae® photoionization detector (PID) equipped with a 10.6eV lamp. Locations of the monitoring wells are shown in Figure 2, while well construction logs with PID screening results are presented in Attachment 1.

3.2 Well Construction

As seen in Attachment 1, MW-2 and MW-4 consisted of 10 feet of 1.5 inch diameter PVC screen (0.01") with the remaining materials being solid PVC riser. Only 5 feet of screen was used in MW-3

as the boring was only 8 feet deep. We developed each well using a peristaltic pump, purging the well until the discharge was relatively sediment free. Each well was completed with a flush mounted road box.

3.3 Groundwater Sampling

We returned to the site on February 10, 1997 to survey the wells and collect groundwater samples. We used disposable polyethylene bailers to collect the samples which were preserved with 4 drops of hydrochloric acid. We placed the samples on ice and delivered them to the State of Vermont Environmental Laboratory on the following day for EPA Method 8020 and Modified 8015-TPH analyses. Lab analyses are included in Attachment 2. We could not locate MW-1, which was installed in August 1996 in the tank pull area, due to ice and snow buildup.

3.4 Groundwater Flow Direction

Based on our site survey and depth to water measurements collected on February 10, 1997 the groundwater flow direction appears to be to the south. However, as there is a perimeter drain around the house (see our November 4, 1996 report) there is undoubtedly a western flow component near the eastern edge of the house.

4.0 RESULTS AND DISCUSSION

Soil screening with the PID indicates that contamination was not present in any of the three borings above the State of Vermont guideline of 10 parts per million (ppm). The highest reading was 6.9 ppm at about 7 feet bgs in MW-2. No hydrocarbon odors were detected in any of the borings.

Toluene was the only parameter detected in the volatile organic compound analyses (Method 8020). Twelve parts per billion (ppb) was detected in MW-2 (MW-100 in the lab result sheet found in Attachment 1), and 13 ppb in MW-3 (MW-101 in the Lab result sheet). TPH concentrations were not detected above the 100 ppb practical quantitation limit. It is likely that the low toluene concentrations can be attributed to the monitoring well material used by Adams Engineering. Attachment 3 shows a January 22, 1997 correspondence from Adams Engineering discussing toluene contamination in their well materials, which were purchased from TIMCO Manufacturing, Inc. of Prairie du Sac, Wisconsin. Adams' had detected unexplainable levels of toluene as far back as 1994 in their 1.5 inch wells. They were able to exclude their decontamination water and anti freeze used in their power washer as the source of toluene, which led them to investigate the 1.5 inch pipe materials more closely. Adams' contacted TIMCO in December 1996 and was informed that there was a problem with toluene that was corrected in November 1996. However, well caps, plugs, and points may still have been contaminated. Based on this letter, it is very possible that the wells we installed were contaminated with toluene. At any rate, the toluene levels are below the State of Vermont Groundwater Enforcement Standards. Besides toluene, there were no other hydrocarbons detected above the laboratory's detection limit.

The groundwater flow direction is to the south, so that MW-4 is located downgradient of the tank pull area. MW-2 and MW-3 are located to the north and east of the tank pull area, respectively. Although we did not advance additional borings on the west side of the house during this investigation, we did collect both soil and

groundwater from this area as reported in our September 1996 report. Therefore, the limits of contamination discovered during the tank pull have been adequately defined.

5.0 CONCLUSIONS / RECOMMENDATIONS

We have groundwater and soil analytical data from locations surrounding the contaminated tank pull area. Since none of these locations contain detectable levels of contamination we can be reasonably certain that the contamination has not migrated substantially away from the tank pull area. Further, the hand borings and drain samples reported in our November 1996 report indicate that the contamination has not spread to the western part of the property via the foundation footing drain.

As discussed in our September 1996 report, there were no elevated VOC concentrations detected in the Pedrozo basement. However, the contamination's proximity to the house places the basement at some risk. Based on data collected during both investigations, the soil and groundwater contamination appears to be limited to the area directly surrounding the tank removal excavation to a depth of approximately 6.5 feet bgs. Based on a tank removal area of 10 feet by 5 feet and 2.5 feet of contaminated soil (see September 1996 report) there is a total of approximately 4.6 cubic yards of contaminated soil on the Pedrozo property. This relatively small amount of soil could be transported to a disposal facility for a reasonable cost thereby eliminating potential future vapor problems in the basement. We can present a workplan and cost estimate for removing this soil at your convenience.

Although it appears that the contamination has not spread from the tank pull area, we recommend sampling the four monitoring wells at least one more time to confirm these findings. If contamination is still not detected and the contaminated soils are removed, the site should be a candidate for Sites Management Activities Completed (SMAC) status.

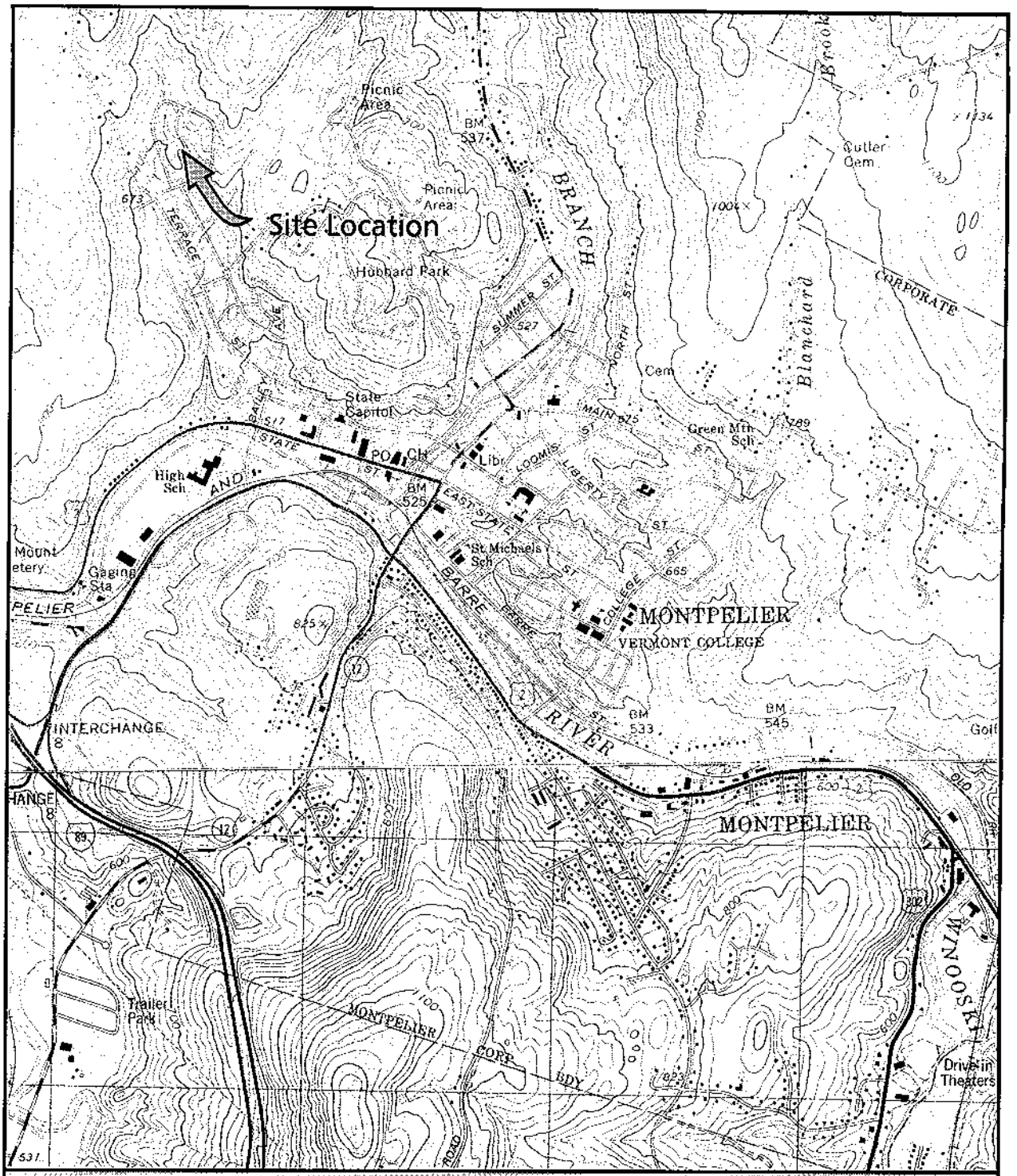


FIGURE 1: SITE LOCATION MAP
Pedrozo Residence
Montpelier, Vermont

0 1/2 MILE
Approximate Scale in Miles
Contour Interval 6 Meters

Source: Montpelier, VT Quadrangle, 7.5 Minute Series, 1:24,000 Scale, USGS 1968;
Barre West, VT Quadrangle, 7.5 Minute Series, 1:24,000 Scale, USGS 1988
g:\proj\96-630\invest\figures\location.cdr
int: 08-09-96 dkm

STONE ENVIRONMENTAL INC

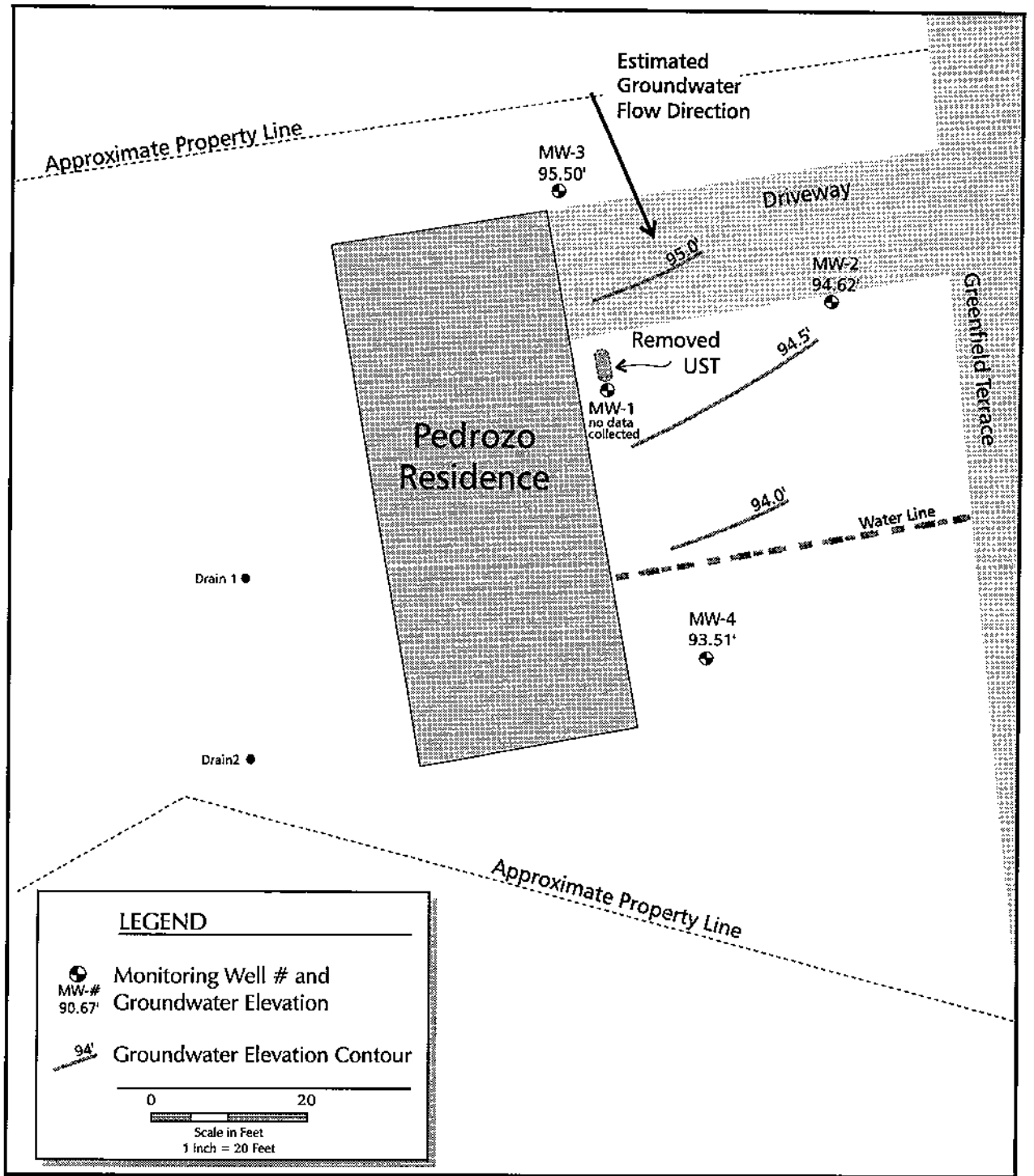


FIGURE 2: SITE MAP AND
GROUNDWATER ELEVATION CONTOUR MAP - FEBRUARY 10, 1997
Pedrozo Residence
Montpelier, Vermont

Source: Stone Environmental Survey, 8-7-96
g:\proj\96-630\invest2\gw_map.cdr
int:03-07-97 jjk rev1: 03-21-97

STONE ENVIRONMENTAL INC

ATTACHMENT 1

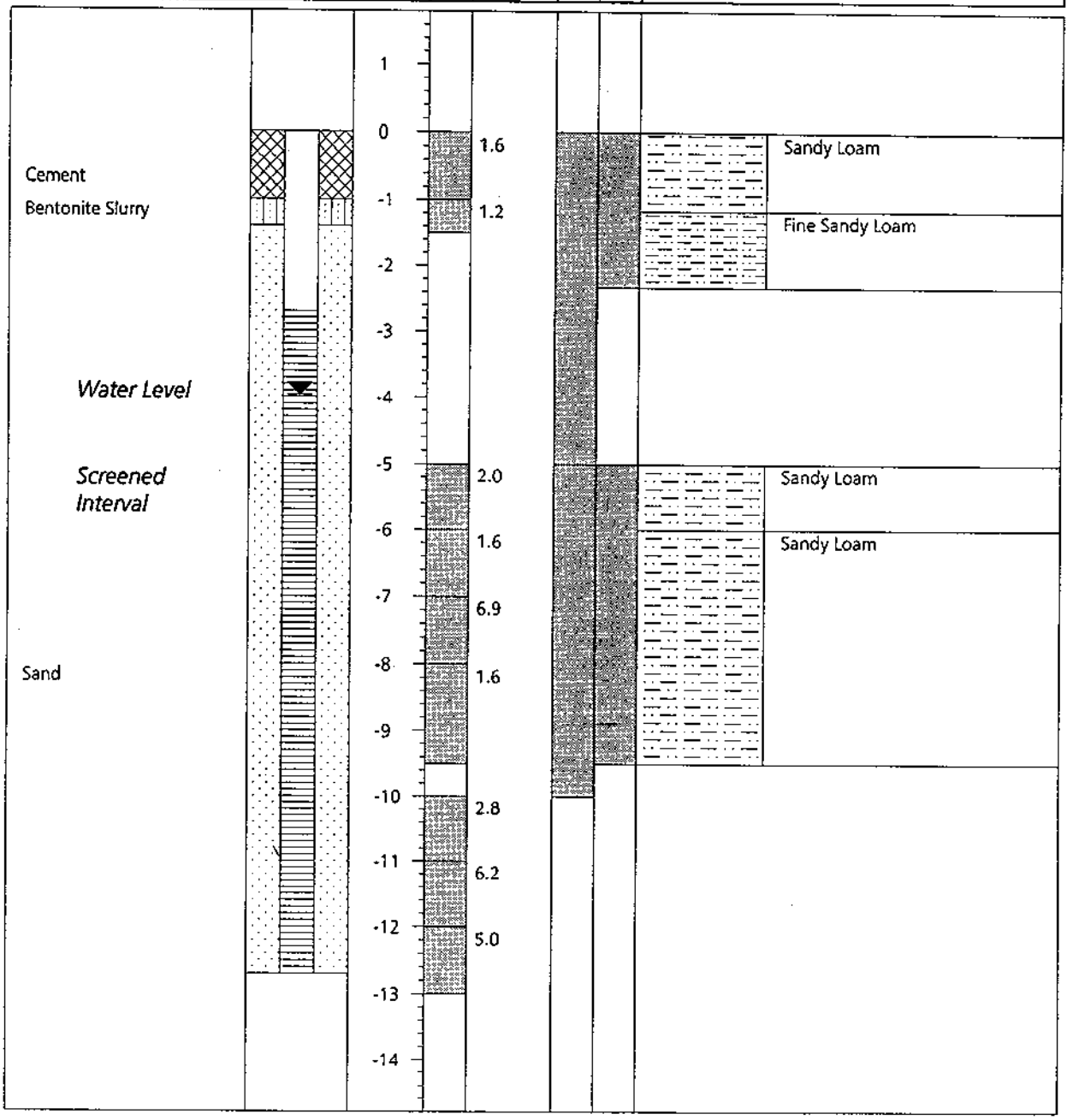
Well Construction Logs

Monitoring Well MW-2
Pedrozo Residence

Date Drilled: 12-20-96
Logged by: Jeff Kelley
Date of Water Level Measurement: 02-12-97

Field notes (Jeff Kelley)
01-28-97 ttk; revt: 03-26-97 jms
g:\proj\96-630\invest\figures\mw2.dat

STONE ENVIRONMENTAL INC

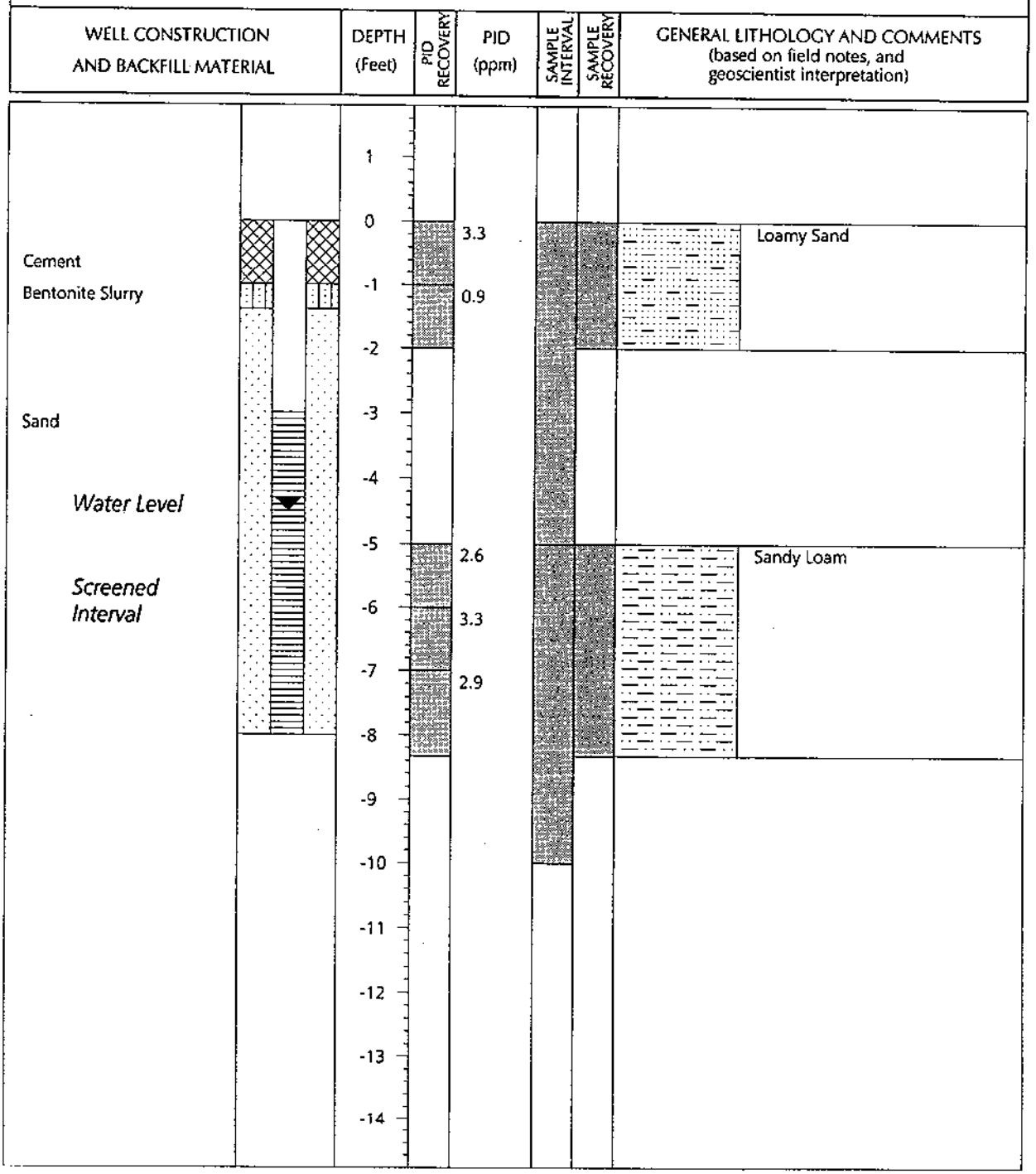


Monitoring Well MW-3
Pedrozo Residence

Date Drilled: 12-20-96
Logged by: Jeff Kelley
Date of Water Level Measurement: 02-12-97

Field notes (Jeff Kelley)
01-28-97 ttk; revt: 03-26-97 jms
g:\proj\96-630\invest\figures\mw3.dat

STONE ENVIRONMENTAL INC

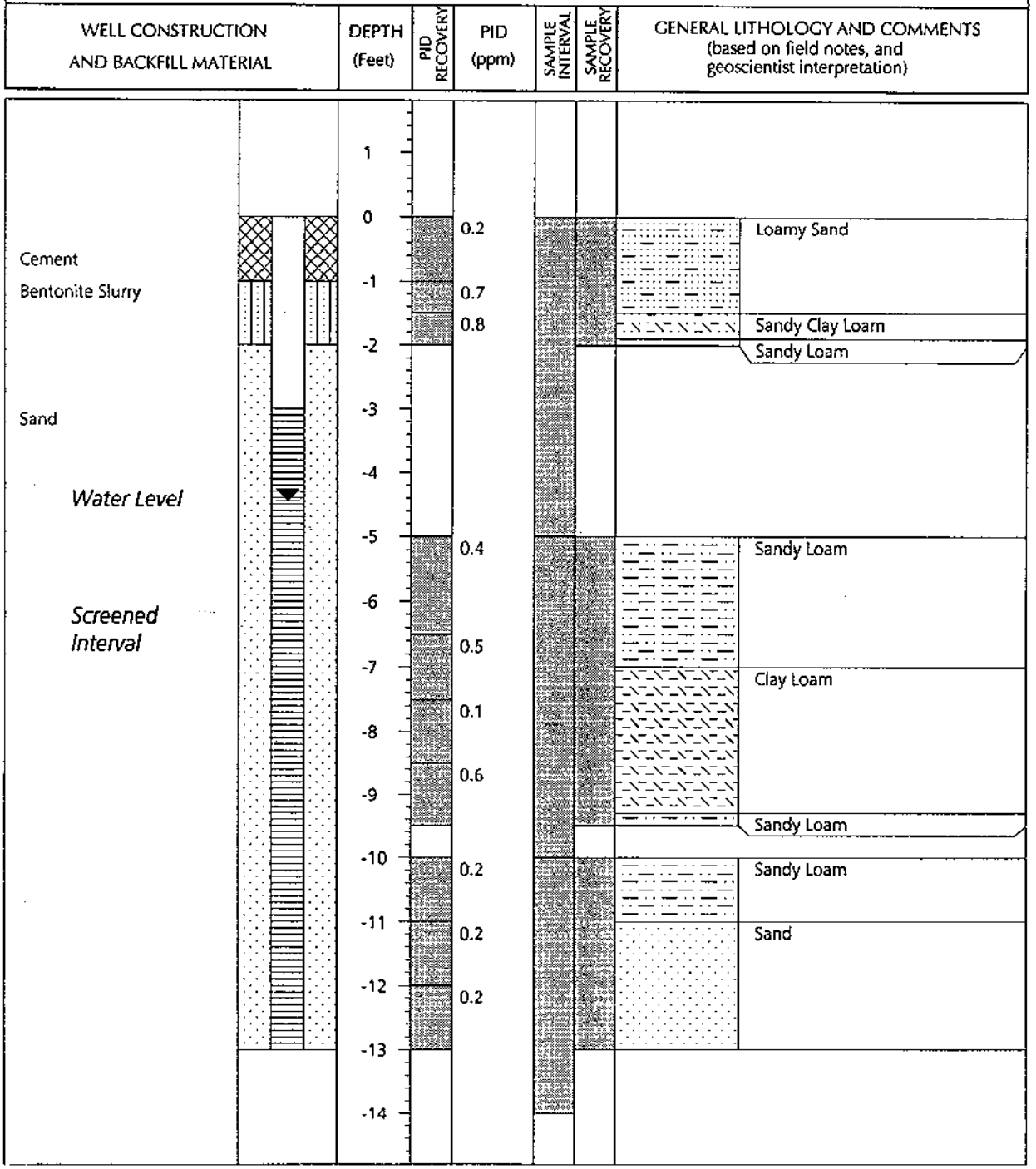


Monitoring Well MW-4
Pedrozo Residence

Date Drilled: 01-24-97
Logged by: Jeff Kelley
Date of Water Level Measurement: 02-12-97

Field notes (Jeff Kelley)
01-28-97 ttk; revl: 03-26-97 jms
g:\proj\96-630\invest\figures\mw4.dat

STONE ENVIRONMENTAL INC



ATTACHMENT 2

Laboratory Results

3/07/97

Department of Environmental Conservation Laboratory
Method 8020 - BTEX and MTBE in Water

GJD

Lab Id: 25214 Report To: Jeff Kelly Phone: 229-4541 Date Collected: 2/10/97
Location: Pedrozo Program: 41 2078 Chain of Custody? Yes

Notes: Pedrozo Site-Stone Environmental

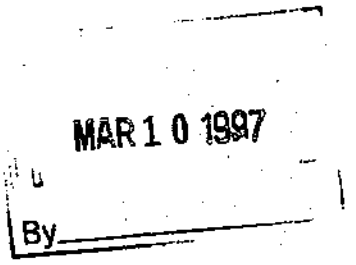
Date Analyzed: 2/17/97 Over hold? No Dilution: 1

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Methyl-t-butylether	1	N.D.				
Benzene	1	N.D.		2	Y	84
Toluene	1	N.D.		3	Y	105
Ethylbenzene	1	N.D.				
Total Xylenes	1	N.D.				
Total Volatile Hydrocarbons	100	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

α,α,α-Trifluorotoluene 110% 4-Bromofluorobenzene . 111%

Notes: No second column confirmation used.



Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

3/07/97

Department of Environmental Conservation Laboratory
Method 8015 - Total Petroleum Hydrocarbons: Water

GJD

Lab Id: 25214 Report To: Jeff Kelly Phone: 229-4541 Date Collected: 2/10/97
Location: Pedrozo Program: 41 2078 Chain of Custody? Yes

Notes: Pedrozo Site-Stone Environmental

Date Analyzed: 3/03/97 Over hold? No Dilution: 1 Date extracted: 2/12/97
Percent extract. 100

Parameter	Units are mg/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Total Petroleum Hydrocarbons	.1	N.D.				

Notes:

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

CHAIN OF CUSTODY RECORD

STONE ENVIRONMENTAL INC

SEI Study # 96630

Project Name/Client Study # Pedrozo SMS # 96-2077

Study Director: Linda Elliot

Sampling Personnel (name/signature): Jeff Kelley

SAMPLE INFORMATION

Sample Identification	Date Collected	Type *	Cont.**	Number of Containers	Analysis Requested: 8020	MOD 8100 (Direct Headspace O/C)			Ship To:
MW-4	2/10/97	1	2	2	X				
MW-4	2/10/97	1	2	1		X			

	Date/Time		Date/Time
Relinquished By: (Signature) J K Kelley / John Hawkins	2/10/97	Received By: (Signature) Heather R. Lewis	2-11-97 9:40 AM
Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Date/Time
Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Date/Time

Special Instructions: * Type of Sample (1) water (2) soil

** Container (1) bag (2) bottle (3) shelby tube (4) other:

Condition of samples when received by lab:

☐ ambient air ☐ ice/ice substitute ☐ frozen

Please remit a completed, signed copy to:

Stone Environmental, Inc.
58 East State Street
Montpelier, Vermont 05602

Page 1 of 1

FACSIMILE COVER PAGE

State of Vermont
Waste Management Division
103 South Main Street/West Building
Waterbury, VT 05671-0404
(802) 241-3888
Fax: 802-241-3296

RECEIVED JAN 20 1997 By

Date: 1-21-97

Number of Pages: 5 (including this page)

PLEASE DELIVER THE ACCOMPANYING MATERIAL TO:

Name: Jeff Kelley

Company: Stone Env. Inc.

Telephone/Fax Number: 802-229-5417

Sender's Name: Linda Elliott

COMMENTS:

RE: Pedrozo Property, Montpelier
SMS Site # 962087

Attached are the lab results from water quality samples collected by your office on 12/24/96 for the Pedrozo site.

L.E.

Please call if any pages are not received.

Name: L. Elliott Telephone Number: 241-3897

JAN 2 0 1997

1/17/97 Department of Environmental Conservation Laboratory
Method 8020 - BTEX and MTBE in Water GJD

Lab Id: 25027 Report To: Jeff Kelly Phone: 229-4541 Date Collected: 12/24/96
Location: mw-101 Program: 41 2078 Chain of Custody? No

Notes: Pediozo Site

Date Analyzed: 12/26/96 Over hold? No Dilution: 1

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Methyl-t-butylether	1	N.D.				
Benzene	1	N.D.				
Toluene	1	13				
Ethylbenzene	1	N.D.				
Total Xylenes	1	N.D.				
Total Volatile Hydrocarbons	100	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

α,α,α-Trifluorotoluene 115% 4-Bromofluorobenzene 96%

Notes: No second column confirmation used.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

JAN 2 0 1997

1/17/97

Department of Environmental Conservation Laboratory
Method 8015 - Total Petroleum Hydrocarbons: Water

GJD

Lab Id: 25027 Report To: Jeff Kelly Phone: 229-4541 Date Collected: 12/24/96
Location: mw-101 Program: 41 2078 Chain of Custody? No

Notes: Pediozo Site

Date Analyzed: 1/09/97 Over hold? No Dilution: 1 Date extracted: 12/27/96
Percent extract. 100

Parameter	Units are mg/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Total Petroleum Hydrocarbons	.1	<100				

Notes:

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

JAN 2 0 1997

1/17/97

Department of Environmental Conservation Laboratory
Method 8020 - BTEX and MTBE in Water

GJD

Lab Id: 25026 Report To: Jeff Kelly Phone: 229-4541 Date Collected: 12/24/96
Location: mw-100 Program: 41 2078 Chain of Custody? No

Notes: Pediozo Site

Date Analyzed: 12/26/96 Over hold? No Dilution: 1

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Methyl-t-butylether	1	N.D.				
Benzene	1	N.D.				
Toluene	1	12				
Ethylbenzene	1	N.D.				
Total Xylenes	1	N.D.				
[illegible]	100	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

α,α,α-Trifluorotoluene 116% 4-Bromofluorobenzene 106%

Notes: No second column confirmation used.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

JAN 2 0 1997

1/17/97

Department of Environmental Conservation Laboratory
Method 8015 - Total Petroleum Hydrocarbons: Water

GJD

Lab Id: 25026 Report To: Jeff Kelly Phone: 229-4541 Date Collected: 12/24/96
Location: mw-100 Program: 41 2078 Chain of Custody? No

Notes: Pediozo Site

Date Analyzed: 1/09/97 Over hold? No Dilution: 1 Date extracted: 12/27/96
Percent extract. 100

Parameter	Units are mg/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Total Petroleum Hydrocarbons	.1	<100				93

Notes:

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

FACSIMILE COVER PAGE

State of Vermont
Waste Management Division
103 South Main Street/West Building
Waterbury, VT 05671-0404
(802) 241-3888
Fax: 802-241-3296

Date: 1-9-97 Number of Pages: 2 (including this page)

PLEASE DELIVER THE ACCOMPANYING MATERIAL TO:

Name: Jeff Kelley

Company: Stone Env. Inc.

Telephone/Fax Number: 802-229-5417

Sender's Name: Linda Elliott

COMMENTS:

RE: Pedrozo Property, Montpelier #96206

DEC LAB sent Trip Blank analysis ~~sent~~ to Tim Copley of WMD. I am forwarding you a copy.

JAN 9 '97

Please call if any pages are not received.

Name: L. Elliott Telephone Number: 241-3897

JAN 0 6 97

1/03/97

Department of Environmental Conservation Laboratory
Method 8020 - BTEX and MTBE in Water

GJD

Lab Id: 25028 Report To: Jeff Kelly Phone: 229-4541 Date Collected: 12/24/96
Location: trip blank Program: 41 2078 Chain of Custody? No

Notes: Pediozo Site

Date Analyzed: 12/26/96 Over hold? No Dilution: 1

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Methyl-t-butylether	1	N.D.				
Benzene	1	N.D.				
Toluene	1	N.D.				
Ethylbenzene	1	N.D.				
Total Xylenes	1	N.D.				
[illegible]	[illegible]	N.D.				

Surrogate Percent Recoveries (S-Surrogate recovery out of range)

α,α,α-Trifluorotoluene 116% 4-Bromofluorobenzene 105%

Notes: No second column confirmation used.

ATTACHMENT 3

Adams' Engineering Correspondence

ADAMS ENGINEERING
Gerard Adams
RD #1, Box #3700, Underhill, VT. 05490
(802) 899-4945

January 22, 1997

Mr. Jeff KellEy
Stone Environmental
Re; Toluene.

1. BACKGROUND. Unexplainable levels of toluene were found in 1.5" wells in the fall of 1994. I looked into my decon water as my truck water/decon tank was painted inside with paint that probably contained toluene as a thinner, the water in the tank had been very hot during some of the suspect well installations. After several analyses of heated decon water 2.5 PPB were found. Dedicated peristaltic pump well development tubing was also analyzed to no avail.

   November 11/25/96 an unexplainable 76 PPB were found in another 1.5 " well. A sample of heated decon water and anti freeze (windshield washer fluid - methanal, water & detergent) used in my power washer were submitted for analysis 11/27/96. 12/2-3/96 Several Stainless Steel wells were checked with a field GC and no unexplainable toluene found. All of the preceding used preheated decon water with residual windshield washer fluid, as did most of the suspect wells. Noted was that all of the suspect wells were 1.5", but so are most of the wells that I instal. The analyses of the decon water and windshield washer fluid came back 12/14/96 with nothing detected per EPA 8020 at .5 and 1 ug/L respectively.

   I contacted Mark O'Donnell director of marketing at Timco about 12/6/96, my sole supplier of suspect pipe, who informed me that there was a problem with toluene that was "corrected two weeks ago" (about 11/18/96). I had well screens air freighted in such that everything is now post 12/10/96.

2. I contacted Mark O'Donnell 12/17/96 to effect exchange of my existing 1.5 & 2" screens with several calls and conversations the gist of which I gleaned: The letters to Jeff Hoffer and Chris Ward are still "forthcoming". Toluene was found in acetone used to clean screens and riser and was replaced with a citrus base solvent/cleaner around 11/18/96, but the acetone with toluene was not removed from the factory until 12/10/96. Samples of screens and/or riser produced during the interim (11/18 > 12/10/96) were tested with no toluene detected. Bailers, caps, plugs, and my solid PVC points are produced in another facility, however; subsequent conversations indicate that caps & points could be effected. Conversations with Ground Water of Vermont indicated no problems. I attribute this to using 2" wells almost exclusively.

3. I continued to use caps, plugs, & points that may have been contaminated (thinking they were not a problem), and did co-mingle risers of pre and post toluene discovery/correction manufacture. Emphasis was placed on screens as the risers would be aboe the water table.

   My guess is that a cheaper technical grade acetone was used for 1.5" screens and riser which are not widely used, and that might explain why the problem persisted for so long with only one other occurrence.

4. All Timco riser , screen, caps, plugs, & points have been returned. I am now using all non-Timco materials (except disposable bailers).

   Should you have further questions call me or Mark O'Donnell at Timco 1-800-236-8534.

Sincerely

G. Adams

Gerard Adams